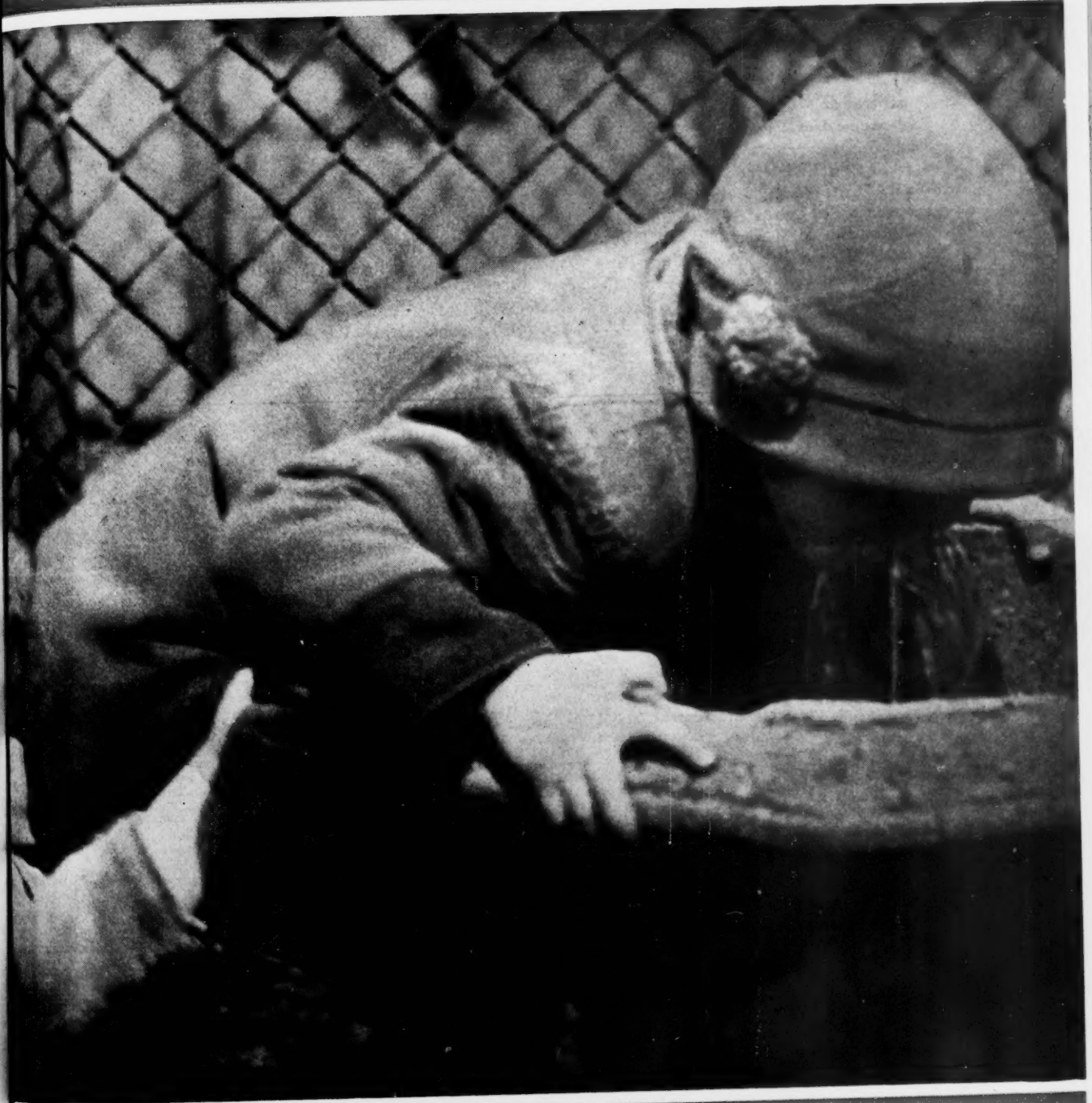


Industrial Standardization

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JUN 18 1935



JUNE

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Minimum Sanitation Requirements Outlined in Approved Safety Code

Essential sanitation requirements covering lighting, ventilation, waste disposal, toilet and washing facilities, water supply and drinking fountains, dressing rooms, and lunch rooms in manufacturing plants, are expected to reduce illness loss

MINIMUM requirements to insure essential sanitary conditions in manufacturing plants have been given national approval as an American Standard by the American Standards Association.

Prepared by a committee under the leadership of the U. S. Treasury Department—Bureau of Public Health, the Sanitation Code outlines the minimum provisions for safe and efficient lighting, ventilation, waste disposal, toilet facilities, washing facilities, water supply and drinking fountains, dressing rooms, and lunch rooms.

Because the one great cause of lost time in industry—accidents—has been receiving attention for some time and is now being brought under control, the other important cause of lost time—sickness—has been added to the program for prevention. The present code is the first step in a comprehensive program which includes proposals

for sanitation codes in mining and quarrying activities, and in camp and temporary activities, as well as in manufacturing establishments. It is expected that adoption of the code by industry may result in considerable reduction in the great illness loss which industrial organizations and workers experience every year.

The committee recommends the approved minimum requirements for use by employers and building owners and for adoption and enforcement by administrative authorities.

The specifications for drinking fountains, approved by the U. S. Department of Labor and the American Public Health Association, and the specifications for the sanitary privy of the U. S. Public Health Service have been approved to supplement the Sanitation Code.

Important requirements of the drinking fountain code include:

1. Fountain shall be of impervious material, as vitreous china, porcelain, enameled cast iron, other metals, or stoneware.
2. Jet shall issue from nozzle of nonoxidizing, impervious material set at an angle from the vertical. Nozzle and every opening in pipe or conductor leading to nozzle shall be above edge of bowl, so that nozzle or opening will not be flooded if drain from bowl becomes clogged.

Note.—It is understood that the angle be such that the water can neither fall back nor be forced back onto the point of discharge. The Women's Bureau desires to make this very emphatic.

3. Nozzle shall be protected by nonoxidizing guards to prevent mouth or nose of drinker

Our Front Cover

Millions of children every day are drinking from unsanitary fountains. The photograph shows one of these, because it is so designed that water can fall back onto the point of discharge. The American Standard requires, among other things, that the nozzle shall be at an angle to prevent spreading of disease germs.

from coming in contact with nozzle.

4. Jet of water shall not touch guard.
5. Bowl of fountain shall be free from corners difficult to clean or collecting dirt.
6. Bowl shall be so proportioned as to prevent unnecessary splashing at a point where water falls into the bowl.
7. Drain from fountain shall not have direct physical connection to water pipe unless trapped in the same manner as a regular plumbing fixture.

Copies of the Industrial Sanitation Code can be ordered from the American Standards Association at 20 cents each. The U. S. Public Health Service publication, *The Sanitary Privy*, is available from the ASA office or from the Government Printing Office, Washington, D. C., at 10 cents. The drinking fountain requirements are now on the press. The price will be 10 cents.

Members of the American Standards Association are entitled to 20 per cent discount when ordering approved American Standards through the ASA office.

Dr. Lucian W. Chaney

Dr. Lucian W. Chaney, noted statistician and safety expert, formerly a member of the ASA Standards Council, died May 6 at the age of 78.

For 25 years a teacher and professor of biology at Carleton College, Northfield, Minn., Dr. Chaney achieved a national reputation in biological research. He then joined the staff of the Bureau of Labor Statistics, and became nationally known in a second field, that of statistics and industrial accident prevention.

Dr. Chaney is given credit for practically eliminating "break-outs" in blast-furnace operation, a type of accident formerly frequent, and often taking a large toll of life.

Active in the work of the American Standards Association, Dr. Chaney played an unusually important role in the development of the national safety code program, being associated with it from its inception. For years he was a member of the committee which planned the program. At one time he was a member of 15 sectional committees and was chairman of several.

Sanitation Code Committee Includes Varied Interests

The following organizations were represented on the sectional committee, sponsored by the U. S. Treasury Department—Bureau of Public Health Service, which prepared the Sanitation Code:

Dr. R. R. Sayers, U. S. Treasury Department—Bureau of Public Health Service, Chairman

Cyril Ainsworth, American Standards Association, Secretary

American Association of Industrial Physicians and Surgeons, *Dr. C. H. Watson*
 American Atmos Company, *C. A. Purcell*
 American Gas Association, *C. C. Winterstein*
 American Institute of Architects, *S. R. Bishop, F. Leo Smith (Alt.)*
 American Public Health Association, *Dr. Emery R. Hayhurst*
 American Society of Civil Engineers, *C. A. Emerson, Jr. (Alt.)*
 American Society of Sanitary Engineering, *Thomas M. Dugan*
 American Transit Association, *R. C. Cram*
 Association of American Railroads—Operating Division—Medical and Surgical Section, *R. C. Bardwell*
 Conference Board of Physicians in Industry, *Dr. C. H. Watson*
 Connecticut Department of Public Health, *Dr. Albert Gray*

Consumers' League of New York, *Mrs. Elinore M. Herrick*

Crane Company, *Roy H. Zinkil*

Electric Light and Power Group, *E. W. Gorry, Alexander Maxwell (Alt.)*

International Association of Governmental Labor Officials

International Association of Industrial Accident Boards and Commissions, *John Campbell, S. W. Homan (Alt.), Sven Kjaer, John Roach, G. J. Speidel (Alt.)*

Kaustine Company, Inc., *J. Warren Fortenbaugh*

Kohler Company, *W. J. Ireland*

Massachusetts Department of Labor and Industries, *J. P. Meade*

Metropolitan Life Insurance Company, *Dr. A. J. Lanza*

National Association of Mutual Casualty Companies
 National Bureau of Casualty & Surety Underwriters, *Holger Jensen, W. M. Graff (Alt.)*

National Safety Council, *R. H. Ferguson, Dr. C. H. Watson*

New York Department of Labor, *John Vogt, Dr. C. T. Graham-Rogers (Alt.)*

San-Equip, Incorporated, *K. D. Jaquith, W. A. Hardenbergh (Alt.)*

Telephone Group, *Dr. L. D. Bristol, A. B. Brown*
 U. S. Department of Interior, Bureau of Mines, *Dan Harrington*

U. S. Department of Labor, *George Cartlidge, D. C. Dow, J. J. Manning*

U. S. Department of Labor, Women's Bureau, *Mrs. Ethel L. Best*

U. S. Navy Department, *S. S. Cook, W. P. Biggs (Alt.)*

U. S. Treasury Department, Bureau of Public Health Service, *Dr. R. R. Sayers, Dr. Roy R. Jones (Alt.)*

U. S. War Department, *Major E. A. Noyes*

Chromel Versus Alumel Standardized by Bureau

When the pyrometry section of the National Bureau of Standards recently set up standards for chromel versus alumel, an important base-metal thermocouple, it established a standard for one type of the most commonly used device for measuring high temperatures.

The thermocouple consists of two wires of dissimilar metals, joined together at one end (the measuring junction). In use, the other ends of the wires (the reference junctions) are connected to some sensitive electrical indicator. When the measuring junction is at a temperature different from that of the reference junctions an electromotive force is developed which indicates the temperature of the measuring junction, assuming that the temperature of the reference junctions is known.

Thermocouples are usually divided into two classes, those made of noble metals (usually metals or alloys of the platinum group), and those made of base metals. Standards have been set up and accepted for noble-metal couples, but very little standardization has been done in the case of base-metal couples, which comprise the large majority of all the thermocouples actually used.

In setting up the standard for chromel versus alumel, a study was made of the characteristics of the chromel-alumel couples now being manufactured, and standard reference tables were prepared showing the electromotive force for any temperature of the measuring junction. The tables provide the manufacturer of thermocouples with a standard to which his future product can be made to conform, and the user with a criterion for determining whether this product is acceptable.

It is also possible by plotting the small deviations of any particular couple from the standard table at a few points to arrive at the deviations at all other points and thus secure a calibration that is more accurate than could have previously been obtained by this method.

The application of temperature measurement and control to the innumerable heat-treating processes used in the arts and industries, particularly those requiring high temperatures, had hardly started at the beginning of the present century. At present, temperature measurement and control are recognized as indispensable in many processes, and the production of the materials and instruments needed for the purpose has developed into a considerable industry in itself.

The calibration of a thermocouple consists in determining a table of corresponding values of temperature and voltage. The various methods

Hygienic Drinking Fountains Replace Out-Moded Equipment

The replacement of out-of-date drinking water facilities with modern hygienic equipment is being encouraged in communities where better housing campaigns are progressing under sponsorship of the Federal Housing Administration.

Vertical jet fountains, still widely used, have been condemned as unsanitary by the American Public Health Association, the United States Public Health Service, Women's Bureau of the Department of Labor and many city and state health departments according to the Plumbing and Heating Industries Bureau.

"Comparatively few persons are aware of the dangers of contamination that exist in the serving of water by the ordinary drinking fountain," the Women's Bureau of the Department of Labor pointed out recently in a bulletin entitled, *Sanitary Drinking Facilities*.

"Employers who would not offer their employees a common drinking cup will supply a vertical-jet fountain without realizing that they are providing a drinking facility with the same dangers as the common cup. Tests of the sanitation of drinking fountains show that all types of vertical-jet fountains are easily contaminated and retain disease germs for some time."

To overcome the objections to the fountain with a vertical jet, manufacturers of plumbing fixtures have designed fittings which direct the stream of water at an angle away from the jet. Additional protection against fouling of the jets is afforded by guards which prevent the lips of the user from touching jets.

The better drinking fountains are equipped with automatic volume regulators which maintain a running stream of uniform height despite variations in water pressure. Thus sudden changes in water pressure cannot cause unpleasant gushes.

In some cases, a vertical-jet nozzle can be replaced by one of the angle-jet type, correctly guarded with little or no change in the fixture.

It has been estimated that less than 10 per cent of the drinking fountains now in use are of the hygienic angle-stream design. The importance of this type of modernization work is indicated by the fact that many epidemics of trench mouth have been traced to infections spread by obsolete drinking fountains.

of calibrating thermocouples and of testing thermocouple materials are described in the March issue of the Bureau of Standards *Journal of Research*. The accuracy attainable by the various methods and the precautions necessary in realizing this accuracy are also discussed.

Standards and Specifications Lift City's Buying From Confusion and Graft¹

by

Russell Forbes

*Commissioner of Purchase,
City of New York*

THE year 1934 may well be termed the first year of the war for centralized purchasing. It has been in every sense of the word a continuous battle—a battle waged against odds which at times seemed almost overwhelming.

Departmental purchasing officials, shorn of their former powers, have maintained a constant barrage of fault-finding and unfavorable propaganda, have overlooked no opportunity to increase the burdens of the Department of Purchase by submitting floods of "emergency" requisitions for small quantities of articles so as to defeat the objective of bulk-buying and to disrupt the routine, and have demanded extra copies of orders and other papers which were "lost" as a device for further increasing the clerical work in the Department.

Vendors who previously enjoyed a virtual monopoly in some lines of business have attempted to discourage competition by cutting prices and, having secured orders, then tried to deliver inferior quality or postponed delivery so as to cripple the city services and cast reflection upon the work of the Department of Purchase.

Thousands of new vendors, competing for the first time on city business, have become discouraged and suspicious when they did not at once secure orders and contracts, and have spread the report that "the same old gang is in control." To disprove such suspicions it has been necessary to conduct an endless series of conferences for examination of records and explanation of Charter requirements.

Competition Is Wide

More than 15,000 firms have actively competed for city business during the year. Although this increased competition has been beneficial, it has

at the same time materially increased the work of interviewing or corresponding with unsuccessful bidders who must have explained to them the reasons why they did not secure the orders or contracts. The prestige of the City of New York has also been both a blessing and a curse. Many vendors have cut prices in order to be able to advertise that their product is used by the city. On the other hand, tremendous pressure has been brought to bear upon the Department of Purchase to buy some new product for which there is no demand or need and which lacked any experience record to justify any expenditure for experimental purposes.

"Closed" Specifications

Many of the city's specifications were descriptive of one favored article and thus debarred competition. The task of revising old specifications and devising new ones to describe articles previously bought by trade name or standard sample is one of colossal proportions.

One competitor submitted a specification which proved to be a carbon copy of the specification which accompanied the requisition from the city department and which had been intended to limit competition to that concern. In another instance, a salesman demanded and secured an interview to find out why his concern had not been awarded the order. In the interview he strongly intimated that something was wrong in the Department of Purchase since he himself had written the specification for the department which requisitioned the material, and only his company was supposed to compete by submitting bids through several agents.

It has been necessary throughout the year also to educate the public officials and vendors to an understanding that the Department of Purchase is operated on a business basis and not on a Republican, Democratic, or Fusion basis. Those

¹Abstract of the Commissioner's first annual report to the Mayor of the City of New York.

belonging to the "opposition" expected no favors, and have been agreeably surprised to find that they have not been discriminated against.

"Gyp" Vendors

One of the fiercest of the year's battles has been waged against "gyp" vendors. These concerns, to the number of several hundred, have been organized for the sole purpose of selling the city. They usually do business under a misleading name indicating a huge organization with vast resources. In reality, they have no stocks on hand, maintain their offices "in their hats," and their only stock in trade consists of the political connections which they have built up in years past throughout the using departments of the city.

Some such firms submit bids on anything the city buys from powdered milk to anvils to grass seed. If they secure an order, they then shop around to find a source of supply. To make a profit, they attempt to "short-weight" the city in delivery or to deliver inferior quality.

If the commodity delivered requires a laboratory test to determine compliance with specifications, time is required for the analysis. If the laboratory report is unfavorable, the delivery is rejected by the Finance Department and a replacement is ordered. A new laboratory report is secured, and again the delivery may be rejected. During the time which has thus elapsed, the stock on hand may have become exhausted, and the city department concerned may be compelled to use the delivery or suspend operations. The City's only recourse is then to accept the delivery of unsatisfactory merchandise with a small price deduction for non-compliance with specifications. This solution has been the hope of the vendor ever since the beginning of the transaction.

Since the Charter now permits the award of an open market order (less than \$1,000 in amount) to "the lowest responsible bidder," scores of "gyp" concerns have been removed from the list of vendors after they default on delivery. But unfortunately the Charter requires that contracts (over \$1,000 in amount) must be awarded to "the lowest bidder," and every week sees one or more irresponsible concerns, which have been debarred from bidding on open market orders, awarded large contracts. The battle against the "fly-by-night" dealers will not be won until they are eliminated from all city business, large or small in amount.

Reorganization of Staff

Such conflicts with external forces were in themselves sufficient to make 1934 an exciting and exhausting year. But they constitute only one side of the picture. While warding off attacks from without, it was necessary to reorganize completely the staff and the procedure from within.



Atlantic Foto Service

Russell Forbes

Although the new Purchase Law was enacted in August, 1933, to take effect on January 1, 1934, no provision whatever had been made in the 1934 budget for additional staff, office space, or equipment. It was necessary to pay salaries from accruals, which prevented the appointment of deputy commissioners or other necessary supervisory aides.

Armed with a law which gave the Department the broadest powers to be found in any similar statute and which made possible its ultimate ex-

pansion into the largest purchasing unit of any government in the world, it was necessary to undertake the task with a demoralized staff and with inadequate supervisory assistance. Useless positions were abolished. Superannuated employees were persuaded to retire. Inefficient employees were dismissed on charges.

From the small remaining staff, new supervisors were recruited on the basis of competence and willingness to work, while former supervisors were placed in positions where they could impede least the development and installation of the new system. The complete collapse of the Department of Purchase, which was freely predicted and ardently hoped for by many officials, was prevented only by the loyalty and the self-sacrifice of the rank and file of the staff which performed prodigious feats in coping with the deluge of work piled upon the office.

Devising New Procedures

In January, 1934, without any additional staff, the Department undertook to purchase for the borough presidents, the courts and county offices, and for all departments under the control of the mayor with the exception of the Department of Hospitals. Because no staff was provided in the budget for the purpose, it was necessary to mobilize and train a Work Relief staff under the supervision of the department engineer to prepare new specifications and revise old specifications for consideration by the Board of Standardization.

A procedure had to be devised for transferring or selling surplus personal property in cooperation with the Comptroller's office and under rules and regulations adopted by the Board of Estimate and Apportionment.

The procedure of the Central Testing Laboratory had to be speeded up in order to make more tests with the same staff.

Centralizing Control of Storehouses

Although vested by law with the responsibility of operating the city's storehouses and installing a new system of stores control, the Department of Purchase was given no staff with which to do so. It was therefore necessary during 1934 to survey the existing storehouses and to determine their suitability for permanent central stores points, as well as to devise a system for their operation. Since it was found that the city's storehouses were, with few exceptions, improperly located or improperly arranged for use as modern establishments, work relief projects were set up and a program of building and rebuilding was initiated.

Additional Functions

Additional functions were added through the year. In June the work of buying for the Department of Hospitals was assumed, and a part

of the purchasing staff was transferred from that department. In July, the sizable task of purchasing all printing and stationery was transferred from the Board of City Record to the Department of Purchase as required by an amendment to the Purchase Law.

Red Tape and Work Relief Materials

The many problems of reorganization as sketched above have been greatly handicapped and retarded by the wholly unanticipated task of purchasing for emergency relief projects. From January 1 to May 1, the Department of Purchase bought the materials for Civil Works Administration projects financed by city funds. Such purchases, however, followed the regular city procedure. Beginning on May 1, it was necessary to set up and operate a new and different system of purchasing under the provisions of Temporary Emergency Relief Administration.

It is universally agreed that the city procedure is beset with more than enough "red tape" to satisfy any systems expert. But the city's red tape pales into insignificance in comparison with the T.E.R.A. procedure for buying emergency relief materials. Because federal, state, and city funds are involved, the accounting requirements of all three governments must be satisfied by three strata of red tape, superimposed upon each other.

The expenditures must be approved by so many and so widely scattered authorities that the project supervisor usually expects delivery before the requisition is received in the Department of Purchase. If the specifications are obscure, the requisition must be returned on its circuitous journey for revision and an explanation of what is really required. If the reimbursement of the expenditure by the federal and state governments is questionable, all doubts must be resolved before the purchase is made. This often requires several weeks of negotiation and correspondence about a given transaction.

Meanwhile the Department of Purchase is invariably blamed for holding up the progress of the project. The situation borders on chaos. No one individual or agency is to blame. The system is at fault, for it is too complicated to be workable. The age-old adage that "too many cooks spoil the broth" was never more pertinent than to the problem of securing materials for work relief projects.

Powers of Department of Purchase

Centralized purchasing for the City of New York has been the result of a step-by-step development. In 1920, a Board of Purchase was established to arrange contracts for the commodities used in large quantities by the departments under the control of the Mayor, and to carry on the work of testing samples and preparing speci-

fications which had begun in the last Fusion administration as a Bureau of Standardization of the Board of Estimate and Apportionment.

In 1923, the Board of Purchase was succeeded by the Department of Purchase, created by state law. The Department of Purchase served the Mayor's departments, but could not buy in amounts of less than \$25. Expenditures between \$25 and \$1,000 (open market orders) were subject to approval by the separate using departments which controlled the funds.

The Department of Purchase secured prices and prepared the orders, which represented its recommendations for purchase. The orders could be returned for securing new bids or could be thrown away, to be succeeded by the preparation of new orders upon receipt of duplicate requisitions.

Expenditures in excess of \$1,000 (contracts) were subject to approval of the separate using departments which actually made the award. Its powers were further lessened in 1929 when the Department of Hospitals was established and was given authority to purchase independently. The Department of Purchase was looked upon as "a poor relation" by past administrations and was treated accordingly.

Savings

It can, however, be claimed with assurance that the combination of purchases into larger contracts, the widening of competition, and the improvement in specifications have prevented any general increases in commodity costs to the city. In other words, the efforts of the Department of Purchase have offset the trend of rising prices, and have held prices paid to the general level of 1933.

In the purchase of only two commodities—printing and fuel oil—the Department of Purchase amply justified its existence during the year 1934. In January, 1934, it was found that the city had been the victim of restricted competition and collusion in buying fuel oil for the ferries and for heating buildings. The price of fuel oil for New York City was fixed and published by the Petroleum Administration Board, and the published price was the maximum to be paid by any large buyer. Nevertheless, the city was asked to pay 20 cents per barrel extra.

Bids on the contract were rejected, and we purchased fuel oil in small quantities in the open market at the published price, by inducing new bidders to compete. When the bidders were finally convinced that the city did not intend any longer to be victimized, contracts were arranged at less than the maximum published price, and the savings for the year 1934 aggregated \$50,000.

The responsibility for purchasing printing was

Why Standards and Sound Buying Were Possible

"His Honor, Mayor F. H. LaGuardia, has never wavered in his promise to the voters to establish a purchasing department on business-like principles.

"He laid down broad policies for the administration of the department, and left to the Commissioner the ways and means for their execution.

"His support and encouragement were major factors in whatever victories were won in the first year of the war for centralized purchasing."—*Commissioner Forbes.*

transferred from the Board of City Record in July. In cooperation with the Director of the Budget, we prepared specifications for printing the 1935 budget. Competitive bids were secured for the first time in the history of the city. Seven printers competed, but the same firm which in previous years had printed the budget without a price agreement submitted the lowest bid and did the work. The saving was \$27,543.

Late in the year, in cooperation with the Commissioner of Accounts, the contract form and specifications for printing the *City Record* and its supplements were radically revised to bring them into line with trade terms and practices. For the first time in history, competition was secured. Again the concern which had for years performed the work without competition was the lowest bidder and secured the contract. But the saving was \$75,000, even though printing prices as fixed by the code authorities are on the increase.

Specifications Obscure

For years the City had been buying fresh fruits and vegetables on antiquated specifications which were entirely out of line with the specifications and grading rules of the U. S. Department of Agriculture and which were so obscure that the deliveries could not adequately be inspected. Consequently, competition was restricted to a small group of vendors. In May, the Board of Estimate and Apportionment adopted new standard specifications for fresh fruits and fresh vegetables which had been in preparation by the Board of Standardization for several months. Immediately following the adoption of new speci-

Extent and Volume of New York Purchases

Father Knickerbocker is one of the world's biggest shoppers. The City of New York buys and uses more than 40,000 different commodity items. It carries on almost every type of governmental activity except the maintenance of an army and navy, and therefore purchases and consumes practically every item produced except battleships and cannon. Its shopping list ranges in size from thumb tacks to steam rollers and alphabetically from apricots to zweibach.

Some conception of the range of commodities procured by the Department of Purchase during the year 1934 may be gained from the following list of more or less unusual items, selected at random from the price records: Chocolate pudding, chow mein, colic powder, diapers, goats, goat hair, imitation hair, henna, herrings, hinges, handkerchiefs, handcuffs, horse meat, inorganic dust, lace, maggots, mince meat, mirrors, monkeys, moleskin, needles, see-saw boards, shadfish, scenery, sound equipment, watermelons, wild cherry bark, and yardsticks.

The following table lists some of the staple items purchased in large quantities during the year 1934:

| Commodity | Amount Purchased | Total Cost |
|------------------|------------------|--------------|
| Beef | 1,825,082 lb | \$184,164.07 |
| Bricks | 7,647,056 | 127,276.61 |
| Butter | 549,406 lb | 149,320.07 |
| Cement, Portland | 1,276,693 bags | 735,758.62 |
| Coal, All Kinds | 505,646 tons | 2,668,907.10 |
| Eggs | 589,869 doz | 151,522.50 |
| Fish, Fresh | 266,147 lb | 18,203.47 |
| Insulin | 72,963 vials | 54,243.30 |
| Lead, White | 297,100 lb | 24,529.37 |
| Lead, Red | 74,896 lb | 7,325.68 |
| Milk | 4,874,338 lb | 310,795.44 |
| Oil, Fuel | 34,955,675 lb | 959,684.09 |
| Oil, Linseed | 34,618 lb | 24,591.28 |
| Pipe, All Kinds | 546,001 lb | 306,583.65 |

cations, wider competition was secured from new vendors, and the prices dropped on an average of 30 per cent. despite the rising trend of the market.

One of the outstanding accomplishments of the

year was a thorough overhauling of the specifications and procedure for the purchase, inspection, and analysis of coal. New specifications were adopted by the Board of Standardization in April, after many conferences and hearings with representatives of the Anthracite Institute, coal dealers, and the coal-using departments of the city. These specifications involved a new method of sampling deliveries and analyzing samples, so that the quality of the coal delivered could quickly be determined before it was consumed.

Investigates Fraud

The Department of Purchase cooperated with the Commissioner of Accounts in his investigation of the coal dealers who had previously defrauded the city. As a result, greater competition was secured from a new group of more reputable dealers. The annual contract was awarded in June, before code prices became effective, at a great saving to the taxpayers. Through more rigid enforcement of specifications and securing a higher quality of coal, the indirect saving will be even greater.

Previously, the Sheriffs bought foodstuffs for the civil prisoners in the five county jails in small quantities as needed and at retail prices. Shortly after the first of the year, a plan was worked out with the Department of Hospitals whereby each jail was serviced daily by the nearest hospital storehouse, and was charged for the food delivered at the prices paid on the large hospital contracts. This procedure immediately eliminated a considerable volume of open-market buying, and resulted in a large reduction of prices, in some cases 50 per cent.

A confidential monthly price service is maintained by the New York State Conference of Mayors and Other City Officials. Questionnaire forms are distributed each month to all the governmental purchasing agents of the state, asking them to supply data on the prices paid during the preceding month for a wide range of commodities. The returns are collated and distributed to all cooperating cities. From such reports comparative figures have been compiled on a representative list of items purchased in large quantities and selected at random for the last six months of 1934. This barometer of prices indicates that the work of the Department of Purchase compares favorably with the work of other purchasing offices of the state.

Bureau of Standardization

A Bureau of Standardization has been established, with three divisions: testing, specifications, and engineering.

Testing Division (Central Testing Laboratory)

The Central Testing Laboratory, originally established by the Board of Estimate and Apportionment in 1911, is now located at 480 Canal Street. In general the duties of the Laboratory are as follows:

1. The testing of samples of all kinds of general supplies purchased by the city to determine their compliance with specifications.
2. The testing of all materials used in construction work and in the laying and resurfacing of pavements, roadways, and sidewalks in the five boroughs of the Greater City, when requested.
3. The carrying on, concurrently with the routine of general testing and along specific lines of the city's needs, of such research work as will give the various city departments the benefit of the best available scientific knowledge, worked out practically along definite lines suggested by the routine of general testing.
4. The preparation of specification data for supplies and materials in which chemical or physical tests are involved, for submission to the Board of Standardization for approval.
5. The simplification of the work of auditing and inspecting claims for supplies and materials furnished the city under properly drawn specifications, prepared by the Laboratory for the Board of Standardization and promulgated by the Board of Estimate and Apportionment, for use by all city departments, and cooperation in preparing specifications and in auditing and inspecting claims for work done and supplies furnished thereunder, so that the city shall, by the faithful carrying out of all specifications, receive full value for money expended.
6. The furnishing to the Corporation Counsel's office of such technical data, taken from the results of tests and from the official records of such tests, as may be required from time to time, to protect the city's interests in legal actions for damages involving materials and supplies furnished to, and work done for any city department.
7. The testing of all samples of supposed narcotics and supposed alcoholic liquors submitted by the Police Department, and the furnishing in court of testimony as to the results of such analyses.

Specifications Division

On December 30, 1932, the Committee on Purchasing, appointed by Acting-Mayor McKee in September of that year, submitted its report. In that report the committee commented at length on the need for standardization of the city's specifications.

The report of this committee became the basis

for the Purchase Law, and all its recommendations, including the Board of Standardization, were completely incorporated in Chapter 829, Laws of 1933.

The Board of Standardization was organized in January, 1934, with the following personnel:

Russell Forbes, Commissioner of Purchase,
Chairman

F. L. Belknap, Engineer, Department of Purchase, *Secretary*

E. J. Larkin, Engineer, Bureau of the Budget (Representing Board of Estimate and Apportionment)

A. J. Erickson, Engineer, Department of Finance

F. J. Kenney, Chief Chemist, Central Testing Laboratory, Department of Purchase

In addition, Mr. Victor McLaughlin, staff member of the Division of Inspection, Department of Finance, attends all meetings as an unofficial member of the Board.

A.S.T.M. Will Hold 38th Annual Meeting

The Thirty-eighth Annual Meeting of the American Society for Testing Materials will be held June 24-28 at the Book-Cadillac Hotel, Detroit.

In addition to the reports of A.S.T.M. committees, the program will include a Symposium on the Place of Materials in Automobile Roads and Rides, and a Symposium on Spectrographic Analysis.

The Tenth Edgar Marburg Lecture¹, on "Aircraft: Materials and Testing" will be given by Dr. L. B. Tuckerman, Assistant Chief, Division of Mechanics and Sound, and Principal Scientist, National Bureau of Standards.

The Relationship of Materials to the House of Today and Tomorrow will be the subject of the addresses at the dinner meeting on Wednesday, June 26, and will be discussed by Stewart McDonald, Assistant Administrator, Federal Housing Administration, under the subject "The Federal Housing Problem", and by J. E. Burchard, Vice-President, Bemis Industries, Inc., "The Role of Materials in Modern Housing."

¹This lecture, which is delivered at the A.S.T.M. annual meeting each year, commemorates the name of the Society's first Secretary-Treasurer, who, through his development of technical programs over a period of 16 years, brought wide recognition to the Society as a forum for the discussion of subjects pertaining to engineering materials.

Propose Changes on Sizes Of Vitrified Paving Brick

The Division of Simplified Practice, National Bureau of Standards, is now circularizing all interests connected with vitrified paving brick to determine the acceptability of a proposed revision of Simplified Practice R1-32, Vitrified Paving Brick.

The revision comprises:

1. Inclusion in the list of recognized varieties of the $2\frac{1}{2}$ in. x 4 in. x $8\frac{1}{2}$ in. vertical fiber lug brick.
2. Inclusion of the $3\frac{1}{2}$ in. x 4 in. x $8\frac{1}{2}$ in. vertical fiber lug brick.
3. Elimination of the 3 in. x $3\frac{1}{2}$ in. x $8\frac{1}{2}$ in. wire-cut lug brick.
4. Elimination of the 4 in. x $3\frac{1}{2}$ in. x $8\frac{1}{2}$ in. wire-cut lug brick.

The revision was proposed by the Standing Committee of the industry at its meeting on April 12 following consideration of the results of a detailed variety survey which had been compiled to show the character of shipments of brick during 1934. The survey showed that shipments of $2\frac{1}{2}$ in. x 4 in. x $8\frac{1}{2}$ in. vertical fiber lug brick increased from 3.3 per cent in 1933, to 19.1 per cent in 1934. The $3\frac{1}{2}$ in. x 4 in. x $8\frac{1}{2}$ in. vertical fiber lug brick increased from 0.4 per cent to 6.6 per cent during that period. The 4 in. x $3\frac{1}{2}$ in. x $8\frac{1}{2}$ in. wire-cut lug brick decreased from 6.5 per cent in 1933, to 3.3 per cent in 1934.

The revised list of six recognized varieties will cover a greater percentage of the total shipments of vitrified paving brick than was covered in the previous list.

The Permanent Committee of the industry unanimously re-elected Colonel R. Keith Compton, Director, Department of Public Works, Richmond, Virginia, chairman of the committee for the ensuing year.

Russians Change Wheels & Axles To Fit Individual Track Gage

Standard gages for railroad tracks, adopted early in the history of American railroading, make the extensive through travel of railroad cars from coast to coast of the United States a commonplace matter.

Although a standard gage has been accepted in most countries of Europe, Russia still maintains her non-standard five-foot gage. The volume of railway traffic continually crossing the frontier from standard to non-standard gage track makes necessary special arrangements for passing cars from one country to the other. Instead of un-

loading and changing from cars of one gage to those of another, the wheels and axles are removed at the frontier and another set substituted to fit the tracks.

Equipment for changing the wheels and axles exists at Riga and Daugavpils in Latvia, at Niegoseloje on the Russian side of the Russian-Polish frontier, through which passes the Warsaw-Moscow main line, and at the Polish frontier station of Zdolbunowo on the Warsaw-Kiev route. The operation of hoisting and changing axles requires twelve minutes when done by hand, but only five minutes with the electric lifting apparatus at Daugavpils.

At the beginning of 1934 the Reichsbahn had nearly 13,000 convertible cars, the Polish railways over 18,000, and the U. S. S. R. at least 31,000. Latvia and Lithuania possess similar stock.

Publish American Standard For Shafting and Stock Keys

The American Standard for Shafting and Stock Keys, recently approved by the American Standards Association, is now available in printed form at 45 cents a copy.

The standard gives dimensions and tolerances for finished steel shafting, parallel stock keys, and taper stock keys, agreed upon by a committee representative of mechanical and civil engineers, machinery manufacturers, steel companies, electrical manufacturing companies, and other organizations interested in shafting and stock keys. The committee worked under the leadership of the American Society of Mechanical Engineers, as sponsor, under the procedure of the American Standards Association. The present edition, now published, is a revision which incorporates in one document four earlier American Standards on finished shafting diameters, square and flat stock keys, plain taper stock keys, and gib-head taper stock keys.

Copies of the standard can be ordered from the American Society of Mechanical Engineers, 29 West 39th Street, New York, or from the American Standards Association, at 45 cents each. Members of the American Standards Association are entitled to 20 per cent discount when ordering copies through the ASA office.

South African Government Sanctions Standards Body

The South African Standards Institution has been recognized by the Minister of Commerce and Industries as the official standardizing body of the South African Union.

Safety Code for Ladders Will Cut Accident Toll

by

W. Dean Keefer

*Director, Industrial Division,
National Safety Council*

LADDERS in one form or another are used in all industrial establishments. They are such simple tools, and they look so harmless, that few people realize that they are the source of many serious and expensive accidents. It is estimated by some authorities that 700 persons are killed and 140,000 others are injured every year in ladder accidents.

A great majority of these accidents result from the improper use of ladders, but there is still a large remainder caused either by makeshift equipment or by ladders that have deteriorated to a point where they no longer should be called ladders.

Soon after its organization 15 years ago, the American Standards Association recognized the need for a set of standards to serve as a guide for manufacturers and users not only in the construction, but also in the care and use of ladders. Thus, a sectional committee was organized under the sponsorship of the American Society of Safety Engineers (now the ASSE-Engineering Section of the National Safety Council), and in 1923 a tentative American Standard was approved by the ASA. This code has just been revised by the same sectional committee which formulated the original document, and it has been approved by the ASA as American Standard.

The code in its present form is extremely simple and easy to understand. Thus, no attempt is made in this brief article to discuss the code as a whole. The committee, however, had to consider numerous technicalities which may be of interest to those who are concerned with ladder accidents and their prevention.

Species of Lumber Named

For instance, in spite of the fact that many hard woods are stronger than conifers, the latter are preferred in the construction of side-rails

Construction, care, and use of ladders have been studied by widely representative committee in establishing standard requirements to eliminate chances of accidents

for ladders because they are lighter in weight than hard-woods. The code specifies that "wood side-rails should be made from Eastern Spruce or Sitka Spruce or an approved equivalent." The code then proceeds to list various species of lumber and to indicate side-rail sizes for different ladder lengths. The same species of lumber are specified for ladder treads (as on stepladders); but various hard-wood species are specified for ladder rungs and cleats (as on single or straight ladders), because for such service added strength is more desirable than lighter weight.

Rung Construction Questioned

During recent years, there has been considerable difference of opinion over the question of whether rung tenons should extend fully through the side-rails or only to within a small fraction of an inch of the outside edge of the side-rail. Those who favor the latter practice advance the thought that ladders with only partial boring retain their rigidity longer and do not get wobbly as soon as ladders whose side-rails are through-bored; and further that there is less opportunity for moisture to get at the tenon of the rung, causing rot.

On this point, the code specifies that "all holes for wood rungs shall either extend through the side-rails or be bored to within 2/16 inch of the outside face of the rail... and the tenon shall be secured in place by a nail or the equivalent to prevent turning."

Many ladders (particularly those used on construction work) are "home-made" and constructed

Committee of Wide Interests Works on Ladder Code

These representatives of ladder manufacturers, insurance companies, governmental agencies, large ladder users, and lumber experts are members of the committee which is responsible for the ladder safety code. Use of the code, with resulting proper use and care of ladders, it is estimated, would materially decrease the total of ladder accidents, amounting in one year to 700 killed and 140,000 injured.

H. D. Bender, Bell Telephone System,
Chairman

M. C. Goodspeed, American Society of
Safety Engineers — Engineering Section,
National Safety Council, *Secretary*

American Society of Safety Engineers,—Engineering
Section, National Safety Council, *F. L. Hurlbutt, Herman B. Gaffers, M. C. Goodspeed, William Newell, H. G. Wiberg*

American Federation of Labor, *M. J. McDonough*
American Society of Mechanical Engineers, *William T. Hatch*

Associated General Contractors of America, Inc.,
F. B. Essex

Bell Telephone System, *H. D. Bender*

International Association of Fire Fighters, *Fred W. Baer*

International Association of Industrial Accident
Boards and Commissions, *E. J. Pierce, James L. Gernon, R. McA. Keown, John P. Meade*

National Association of Building Owners and
Managers, *Paul E. Holcombe*

National Association of Mutual Casualty Companies, *Phillip Reimold*

National Bureau of Casualty and Surety Under-
writers, *D. C. Sayer, W. M. Graff (Alt.)*

American Ladder Institute, *J. C. A. Leppelman*
National Lumber Manufacturers Association, *Arthur T. Upson, Ernest Dolge (Alt.)*

National Safety Council, *Harry A. Schultz*
Underwriters' Laboratories, *S. V. James*

U. S. Department of Agriculture, *L. J. Markwardt*

U. S. Department of Commerce, National Bureau
of Standards, *J. A. Dickinson*

The American Society of Safety Engineers—Engineering Section of the National Safety Council is sponsoring the work of the committee under the procedure of the American Standards Association.

from materials that are handy on the job. Such ladders are frequently far from safe, but the excuse is often given that they are made merely for temporary use and that they are good enough

for the comparatively short time during which they are intended to be employed. The code, of course, does not condemn all home-made ladders, but it does specify the minimum standards which all such ladders should meet. Particular emphasis may well be given the requirement that wood cleats should not simply be nailed to the side-rail but that they should also be housed into the side-rails not less than one-half inch.

Safe Feet Specified

Safety feet for ladders are required in many industrial establishments, but there are so many different types of feet, and floors are made of so many different materials, and the condition of the floors may vary so greatly, that no one type of safety foot can be depended upon to function properly at all times. Thus, the code suggests the use of safety feet, but goes on to indicate that dependence should not be placed on them as substitutes for care in placing or lashing the ladder, or for stationing someone to hold the foot of the ladder, especially on oily metal or concrete floors.

Authorities do not agree upon the safest way to grasp the ladder when ascending or descending. Some advocate grasping the side-rails, emphasizing the value of maintaining a constant running-hold on the ladder, so that should the foot slip, the hands are always in a position to steady the man and help him to avoid falling. Those who advocate grasping the rungs say that the ladder user has a firmer and more secure grip than is possible if he attempts to grasp the side-rails. Because of this difference of opinion, the code is necessarily silent on this point.

Painting ladders is another subject on which the code has nothing to say other than to suggest that ladders should be kept coated with a suitable preservative material. Nevertheless, it seems to be generally agreed that all ladders should be purchased in the natural wood to permit thorough inspection for defects. Then, if a preservative finish is to be applied, many authorities recommend the use of such materials as linseed oil, shellac, or varnish. They object to paint because it may hide cracks and other flaws.

The committee has been fortunate in having within its membership men who have contributed from the experience of leading ladder manufacturers, insurance companies, governmental agencies, large ladder users, and lumber experts. Special credit is due H. D. Bender, of the American Telephone and Telegraph Company, chairman; and M. C. Goodspeed of the General Electric Company, secretary of the committee, for their valuable and untiring efforts in this important work.

Ladder Safety Code Alone Cannot Prevent Accidents

by

James L. Gernon

*Director, Division of Inspection,
New York State Department of Labor*

THIS revision of the Safety Code for the Construction, Care, and Use of Ladders has for its purpose the establishing of proper standards and safe practices for the guidance of those who construct or use ladders.

This Code is intended primarily to provide for the safe construction of ladders of various types. It is no exaggeration to say that a large percentage of the ladders used generally in connection with industrial establishments, in demolition and construction work, on the farms and in homes, and those used for numerous other purposes, are subjected to more abuse and less maintenance and care than any other tool of industry.

There are two important elements in connection with hazards in the use of ladders:

1. Sub-standard construction and maintenance of the equipment.
2. Lack of knowledge or real carelessness in the proper use of such equipment.

Neither of these difficulties is easy to overcome except where there is competent supervision as to construction and maintenance of the equipment and the ability to teach and insist on the proper application of safe practices while working or traveling on ladders.

All the injuries occurring on ladders are not attributable to poor construction, maintenance, and use. Many are the result of a person's physical inability to travel up or down a ladder because the muscles of the feet or legs fail to function properly. Persons so affected cannot use ladders without endangering their lives.

Will Reduce Hazards

If the standards set forth in this Code are carefully followed by the numerous employers and employees who find it necessary to use various types of ladders as they are generally used in different occupations, there will be an appreciable

Caution and common sense in use of ladders is urged by safety official who aided in writing American Standard ladder code

reduction in the number and severity of the industrial injuries resulting from improperly constructed or defective equipment and in the use of both properly and improperly constructed ladders.

Ladders should not be used permanently to reach an elevation, or to perform work, where it is possible and practicable to erect a safe stairway; nevertheless, ladders are useful and essential tools of industry which must be used temporarily to enable workers to perform dangerous but necessary work.

Need Care in Construction

The problem of securing the application of these standards would not present great difficulty if we had only to deal with equipment made by the majority of the commercial ladder manufacturers. If everyone used ladders made by these manufacturers we could feel reasonably assured that the equipment would be of the correct materials and properly constructed, but we must realize that thousands of homemade unsafe ladders are constructed and used in industry on all types of construction and other work. It is in these classes of employment that standards are greatly needed to protect the workers. Therefore, it is industry's problem to educate employers and employees to understand and apply these standards to the construction, maintenance, and use of ladders.

The use of ladders to reach different levels or elevations is as old as the human race, starting from a very crude type of construction. When we see some of the crude devices of the present day which are made to serve as ladders, we must

admit that many employers and their employees have not advanced very far from the methods of our primitive forefathers. Many of the present-day workers are not as agile as the primitive man, and apparently no more skillful in their workmanship, at least in the construction of home-made or make-shift ladders.

The Chances Men Take

It is remarkable the chances so many men take with poorly constructed and defective ladders and it is amazing how indifferent they are to the dangers inherent in faulty construction of both ladders and scaffolds. Far too many men place too much faith in defective lumber or on an improperly driven "ten-penny nail" used in the construction of both ladders and scaffolds.

It would be ideal if none but experienced workers were permitted to construct so-called home-made or make-shift ladders, but no matter how laudable this would be it is impossible to accomplish. It is not even possible to teach all the so-called mechanics who make these poorly constructed home-made or make-shift ladders the technique of driving nails so as to obtain the maximum holding strength or to drive them without splitting or fracturing the lumber.

There is a very general lack of knowledge among workers as to the science of driving a nail properly; although it is a common belief among people generally that they know how to drive nails. Driving nails weakens many ladders. It is not to be expected that all persons able to wield a hammer can drive a nail as it should be driven, especially because there is more to the science and technique of driving nails than is realized. Therefore, there are many defective ladders constructed because a so-called wood worker believes that he is a competent mechanic.

Weakest Point Determines Safety

All of the standards of this Code are most important and essential. A ladder, like a chain, is no stronger than its weakest link. This weak link may be part of the ladder itself, its poor construction, or it may be the person installing or using it.

If any part of this Safety Code is of more importance than any other, I believe it is Sections 5 and 6 "Construction and Installation, including Clearance, Fastenings, Pitch, and Maintenance" and Section 8 "Care and Use" including Safe Practices. These sections are most important because, even with the best type of equipment being used, without careful attention as to maintenance and safe practices, a large number of fatalities and serious injuries would result.

While safe construction of ladders is important we should not forget that more skill is required in the use of the human body in order to

properly climb or descend a ladder than when a person is working on a level surface. This is especially true when carrying tools and materials on a ladder. It is even more difficult when it is necessary to perform work while perched on a ladder. To do this requires experience and dexterity, accompanied by physical ability to maintain a proper equilibrium at an elevation without an over-secure footing.

If ladders are made to the specifications of this Code, their construction will be good; and if they are maintained and used as provided in the Code, there should be a significant reduction in the fatal and the serious injuries in those industries which are using ladders.

Great Britain Initiates Wide Building Standards Program

A comprehensive policy of standardization in the building industry of Great Britain has been inaugurated through the British Standards Institution, according to a recent article in *Machinery Market*, London.

The Building Industries National Council, which as representative of all the important organizations associated with the building industry has already brought about a considerable degree of coordination in the industry, was instrumental in bringing the building standards program to the British Standards Institution. In carrying out its program the Council came to the conclusion that standardization, initiated and supported by representative organizations, can do much to further the best interests of industry and of the community as a whole.

A recent meeting of the Building Divisional Council of the British Standards Institution, of which the Building Industries National Council is a member, approved a preliminary program for the initiation of building standards.

Textile Fabrics Association Requests Commercial Standard

The Textile Fabrics Association has requested the cooperation of the National Bureau of Standards in establishing a Commercial Standard for Color Fastness of Curtain and Drapery Fabrics, the Bureau of Standards announced.

The project, it is expected, will cover definitions, nomenclature, methods of test, color fastness to light, washing, dry pressing, marking, and labeling.

Large American Delegation Will Attend International Electrotechnical Session

Fifteen American representatives, including the president, honorary president, and assistant secretary of the United States National Committee of the International Electrotechnical Commission, will attend the Plenary Meeting of the Commission at The Hague from June 18 to 21 and at Brussels from June 24 to 27.

Dr. C. H. Sharp, president of the USNC, will act as chief of delegates during the meetings. Others who will attend as American representatives are:

- A. E. Kennelly, honorary president of the USNC, Harvard University
- J. W. McNair, assistant secretary, USNC, American Standards Association
- L. F. Adams, General Electric Company, Schenectady, N. Y.
- W. C. Binz, Aluminum, Ltd., Geneva, Switzerland
- James Burke, Burke Electric Company, Erie, Pa.
- Francis Hodgkinson, Westinghouse Electric & Manufacturing Company, Philadelphia, Pa.
- K. M. Irwin, Philadelphia Electric Company, Philadelphia, Pa.
- C. B. LePage, American Society of Mechanical Engineers, New York
- Dr. M. G. Lloyd, National Bureau of Standards, Washington, D. C.
- F. R. Markley, Sun Oil Company, Philadelphia, Pa.
- L. F. Morehouse, American Telephone and Telegraph Company, London, England

- G. H. Stickney, General Electric Company, NELA Park, Cleveland, Ohio
- H. R. Summerhayes, General Electric Company, Schenectady, N. Y.
- W. C. Wagner, Philadelphia Electric Company, Philadelphia, Pa.

Twenty-six national committees, fully representative of all sections of the electrical industry in their respective countries, are members of the International Electrotechnical Commission, and will be represented at the plenary meeting. Projects covering all phases of electricity, presenting international problems, are scheduled for discussion by the delegates of the national committees, and for consideration in the hope of reaching international agreement.

Nomenclature, steam turbines, aluminum for conducting purposes, insulating oils, radio communication, and electric cables are the subjects scheduled for consideration during the meetings at The Hague.

At Brussels, the following subjects will be considered: Graphical symbols, lamp bases and sockets, standard voltages and currents and high-voltage insulators, electric traction equipment, electrical measuring instruments, terminal markings of electrical machines and apparatus, power switchgear, and internal combustion engines.

Suggests Simplified Practice For Packaging Railway Parts

Proposed Simplified Practice Recommendations concerning the packaging of air brake materials, and automotive engine (bus) parts, respectively, have been mailed to those interested, for their consideration and approval, by the Division of Simplified Practice, National Bureau of Standards.

These proposals, sponsored by the American Transit Association, through its Purchases and Stores Committee No. 2, on Standard Packages, cover the number of units per package best suited to storing, unit piling, inventory taking, distributing, and convenience to the user of the materials so packed.

The proposal for packaging of air brake materials covers 28 different compressor parts, such as assembled commutator segments, armature coils, discharge valves, etc.; and 16 different governor parts, such as piston rods, bushings, finger boards, etc.

The proposal for packaging of automotive engine (bus) parts covers 26 different items, such

as intake valves, compression rings, spark plug terminals, etc.

Copies of the proposal can be obtained from the Division of Simplified Practice, National Bureau of Standards.

Purple Thread Marks Canadian Wire & Cable

A standard system for identifying the insulated wire and cable made by Canadian and United States manufacturers has been adopted by the Canadian Engineering Standards Association, with the cooperation of Underwriters' Laboratories. A purple thread will be woven into the outer braid of the wire, with the identifying color of the manufacturer, to indicate that the wire is a Canadian product. The Underwriters' Laboratories has agreed not to assign a marker containing a purple thread to any United States manufacturer. The Laboratories have also promised to discourage the use of a purple thread in any form by manufacturers in the United States.

Fire Protection Code for Exhaust Systems Is Given National Approval

by

E. W. Fowler¹

*National Board of
Fire Underwriters*

THE Regulations for the Installation of Blower and Exhaust Systems for Heating and Ventilating, Removal of Flammable Vapors, and Conveying of Dust, Stock, and Refuse as recommended by the National Fire Protection Association, have been approved by the American Standards Association as American Standard.² The National Fire Protection Association is taking responsibility for this standard as Proprietary Sponsor, under the procedure of the ASA.

Recommended regulations on this subject were first adopted by the National Fire Protection Association after about two years of preparatory work, in 1915, following which they were adopted and published as the Regulations of the National Board of Fire Underwriters. These were revised in 1924 to give more detailed provisions on systems for the removal of flammable vapors, and minor revisions were made in 1929 and 1931.

Fire Hazards Covered

Ventilating systems and other systems employing fans or blowers for producing a forced movement of air through a system of ducts have a relation to fire hazard which is frequently not fully appreciated but which may have serious consequences in time of fire. It is the fire-hazard aspects of such systems which are intended to be covered in these Regulations.

¹Member of the committee which is in charge of the N.F.P.A. Regulations for the Installation of Blower and Exhaust Systems for Heating and Ventilating, Removal of Flammable Vapors, and Conveying of Dust, Stock, and Refuse.

²A copy of the edition as approved by the American Standards Association has recently been published by the National Fire Protection Association and may be obtained from that Association at 60 Batterymarch Street, Boston, Mass., or from the ASA office. ASA members are entitled to 20 per cent discount on approved American Standards ordered from the ASA.

These regulations apply primarily to industrial plants but are also applicable to other types of buildings. They are divided into three parts: One dealing with heating and ventilating systems, another with systems for the removal of flammable vapors, and the third with dust, stock, and refuse conveying systems.

Air Ducts Spread Fire

The fire hazards of ventilating systems lie principally in the ducts through which smoke and hot gases can quickly spread from one room to another. Some of the ways in which air ducts may assist in the spread of fire are the following:

1. Fire may originate in combustible material located close to the fresh-air intake from which burning gases and hot smoke will be discharged into and ignite combustible material in various parts of the building;

2. Burning gases may enter a ventilating opening in one room and be carried through the duct into other rooms;

3. The duct may get sufficiently hot from the hot gases passing through it to ignite woodwork or other combustible material in contact with or not properly separated from it;

4. The duct may be ruptured by an explosion or by falling debris permitting fire to enter the duct and come out at the discharge outlets in other rooms;

5. With a recirculating system, hot burning gases from a fire in one room may be drawn back to the fan and be discharged throughout the building.

Ducts which carry flammable vapors, dusts, or other materials present an additional source of fire hazard in the burning of the materials in the duct.

The possibility that ducts will serve as a means

for the rapid spread of fire can be greatly reduced by giving proper attention to the construction, installation, and protection of the ducts. One of the most important items in connection with the protection against spread of fire is the installation of suitable fire dampers at duct openings through fire walls. Because of the rapidly growing use of air-conditioning systems it is desirable to have a standard covering the features related to protection against fire hazard.

Tests for Purchase Specifications Show Towels Deteriorate in Storage

The discovery that the absorption qualities of some paper towels decrease during a few months' storage so as to render them unserviceable prompted the National Bureau of Standards to make a new study on properties and testing of paper towels, the results of which are now available from the Government Printing Office, Washington, D. C., Circular C294, at five cents each.

The original study was made in 1924 at the request of the chairman of the paper technical committee, Federal Specifications Board, for use in developing a specification for the purchase of paper towels by Government departments.

Towels representative of the domestic products were stored at the Bureau, and periodic tests showed that their absorption qualities decreased steadily and to such an extent that at the end of six months some of them were unsatisfactory for use.

A study of the use of a heat test to foretell the extent of loss of absorptiveness revealed that the results of a one-hour heat treatment at 100 deg C may safely be used to predict whether a towel will lose too much of its absorption quality during storage. This test is recommended as an improved means of testing absorptive quality in the evaluation of towels. The only other serviceability test required, in the opinion of the Bureau, is the determination of tensile breaking strength, although the towels should be inspected for softness, cleanliness, and imperfections.

The studies were carried on by the Bureau with the cooperation of the paper towel manufacturers.

The Federal Specification for Paper Towels (UU-T-591) was formulated by the paper technical committee of the Federal Specifications Board, following consideration of the information developed in these studies, and of the suggestions of manufacturers and consumers. The specification is available from the Superintendent of Documents, Government Printing Office, Washington, D. C. at five cents a copy.



Complete destruction of this factory, with the loss of one life and serious injury to four men, is charged to a blower system installation not in accordance with the recommendation of the National Fire Protection Association. The fire started in the processing of feathers for the manufacture of pillows, and the blower system, not equipped with standard safeguards, blew burning feathers through the building.

Reaffirm Simplified Practice Recommendations

Reaffirmation of the following Simplified Practice Recommendations by the respective standing committees of industry, without change, has been announced by the Division of Simplified Practice, National Bureau of Standards:

Grinding Wheels—R45-32—5 cents.
Pocketknives—R99-30—10 cents.
Structural Slate—R13-28—10 cents.
Shovels, Spades, and Scoops—R48—5 cents.
Hickory Handles—R77—5 cents.
Dental Rubber (Base and Veneering)—R138-32—5 cents.

Copies of the Recommendations are available from the Superintendent of Documents, Government Printing Office, Washington, D. C., or from the American Standards Association office.

Contagious Diseases Checked Through Modern Sanitation

The average man does not realize the enormous progress that has been made in the last few years in sanitation, or the remarkable improvement in the efficiency of modern sanitation methods over those of a few years ago.

The research laboratories of leading colleges, the United States Government, and chemical manufacturers, are rapidly taking the guesswork out of this important phase of our industrial life.

The writer can distinctly remember asking his grandmother what caused Mrs. Jones' death and being answered that she died of "the wasting sickness," which might have been any one of a dozen contagious diseases.

Sanitation and contagious disease prevention were unknown quantities in Grandma's day and any new ideas that might have been suggested would have been considered far-fetched and visionary.

However, the conclusive results achieved by modern sanitary methods have been so forcibly proven that industrial concerns have given the subjects serious consideration, both from a humanitarian as well as an efficiency standpoint.

In one of our large modern cities a serious epidemic of amoebic dysentery, a very dangerous contagious disease, was quickly identified, traced to its source and eliminated by the alert chemists and bacteriologists in the laboratory of the board of health.

In the old days this outbreak could have easily become national in its scope.
—*Pacific Purchaser*, Dec., 1934.

Research on Fading of Dyed Textiles May Help Consumer

A research program which may be helpful in connection with the various consumer standards programs now under way was recently completed at the National Bureau of Standards.

Seven pieces of dyed textiles were selected for test to determine the degree of fading which takes place under various light intensities and humidity conditions.

Light and Humidity Tests

A glass-enclosed carbon arc lamp was used and the dyed fabrics were exposed at distances from the lamp which would give intensities equal to that in the Fade-Ometer, a machine regularly used in textile testing laboratories to determine resistance to fading. On the basis of this intensity as 1, tests were also made using intensities of 0.3, 0.1, and 0.02. The temperature of the air about the dyed materials was maintained at 43 deg C and the relative humidity at either 75 or 31 per cent. The change in spectral reflectance with time of exposure was determined.

It was discovered that the time of exposure required to produce a given amount of fading at intensity 0.1 may be anywhere from ten times to only two times that required at intensity 1. Thus, dyed fabrics which fade at a certain rate under noon sunlight do not necessarily fade at a relatively slower rate when exposed at another intensity, for example, that of the diffused daylight of a room.

Rate of Fading Retarded

Also, it was determined that the rate of fading of some dyeings is not affected by a change in the relative humidity of the surrounding atmosphere of from 75 per cent to 31 per cent, but the rate of fading of others is retarded by a factor of 2.

The findings of this research program may be expected to be of value in future projects on textiles carried on under the procedure of the consumer standards program of the American Standards Association.

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Hammer Recommendation Is Out for Approval

A proposed Simplified Practice Recommendation on Hammers has been mailed to producers, distributors, users, and others interested by the Division of Simplified Practice, National Bureau of Standards, for acceptance.

The recommendation is based on a careful survey of existing conditions and requirements, and, if approved by all interests, will be reviewed regularly by a standing committee of representatives of the industry which will be appointed for that purpose.

Copies of the proposal are available from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Manufacturing and Inspection Standard Has Been Approved by Hosiery Industry

**Standards Committee's report
will be submitted to industry for
approval**

STANDARDS for construction and inspection of women's full-fashioned hosiery have been approved by a committee of the National Association of Hosiery Manufacturers, and will be submitted to the industry for adoption.

The standards are of two types, one setting minimums of construction, while the other is designed to establish a uniform method by which the industry may classify its product as to quality. They represent the work of a committee appointed by the association more than a year ago.

Standards of inspection are also covered in the proposal. Mills at present have their own standards of inspection, depending very largely upon the human eye, with the result that there has been a wide variation in classification by the industry, the association states. In order to obviate this difficulty, the committee has decided upon a plan of dividing the stocking into four zones, and of defining the maximum of irregularities which may appear in each zone in a stocking of a given classification as to quality.

The standards, the association states, will "rule out misrepresentation of any kind that enables certain types of retailers, for instance, to sell as first quality, at ridiculously low prices, goods that, according to minimum construction standards would have to be stamped sub-standard, or lower than grade A."

Desire Consumer Protection

An abstract of the report of the committee follows:

The approach to the question of standardization of women's full-fashioned hosiery has been almost wholly from the viewpoint of the ultimate consumer, with the desire on the part of the industry to protect the consumer in purchases of full-fashioned hosiery over the retail counter. It is obvious that benefits will accrue in like manner to retail distributor, jobber, and manufacturer.

The committee studied the question of specification standards versus testing standards, and while there may be some advantage to be obtained through recognized testing methods already used in the industry, these tests cannot successfully accomplish the association's purpose until specification standards have been set and adopted by the industry, the Committee reported.

Recommendations covering approved methods of testing for stretch, abrasion, etc., of fabrics was held to be a secondary matter for consideration after the first step has been taken in adopting what are known to be the correct principles of standardization in the manufacture of our product. Construction Standards and Inspection Standards are, the Committee found, separate problems.

Manufacturing Standards

The Committee, in setting up its proposed Standards of Construction, realized that its efforts could not meet with success unless standards were set up for all basic types of merchandise. The standards proposed are minimum standards.

In order to accomplish this purpose, three classifications were set up as follows:

1. Grade A — This represents the highest classification of regular quality merchandise in its respective gauge.
2. Grade B — Representing medium quality merchandise.
3. Sub-standard—Any grade below Grade "B".

In setting up the proposed standards, the Committee considered the following construction factors as essential:

- Width of needle bar.
- Number of flare narrowings.
- Total length of stocking.
- Number of courses from picot to heel loose course.

Standards based on the above are practical from a manufacturing standpoint as they involve no considerations new to the industry.

Minimum construction standards have been drawn up embodying these four items of construction. Because minimums have been set, no

tolerance below these minimums will be permitted.

Stockings constructed according to these specifications show a readily visible difference between the "A" and "B" grades.

Specifications as to width of board become unnecessary in view of the specifications for needle bar width, length of hose, and total courses from picot to heel loose course.

Plain Knit Stockings

The standards referred to are for conventional top (welt) stockings, that is, the plain knit type and not specialty tops (welts) as elastic, adjustable, lastex, mesh, or those in which the material or stitch is of such a nature as to give unusual stretch or elasticity.

Specialty top (welt) stockings may be made on less than the full 14 in. needle bar, but must contain not less than minimum number of needles in the body of the stocking above the calf narrowings than required for stockings with conventional tops (welts).

Tops (welts) with picot or lace designs shall not take any stocking out of the conventional class.

Extra-short or extra-long stockings shall contain the proportionate number of total courses based on the 30 in. standard.

Twist variations shall not exceed the tolerances permitted by the Throwsters Research Institute.

The committee recommended that in classifying the types of hosiery we adopt the word "sheer" for "chiffon" and the three general classes would be as follows:

| Sheer | Semi-Service | Service |
|--------------------|--------------------|----------------|
| 39/5 th. or under. | 6 to & incl. 8 th. | 9 th. or over. |
| 42/5 th. or under. | 6 to & incl. 7 th. | 8 th. or over. |
| 45/5 th. or under. | 6 to & incl. 7 th. | 8 th. or over. |
| 48/4 th. or under. | 5 to & incl. 6 th. | 7 th. or over. |
| 51/3 th. or under. | 4 to & incl. 5 th. | 6 th. or over. |

In connection with the classification of sheer, semi-service, and service weights, the threads mentioned shall be on the basis of 13/15 denier or the equivalent thereof.

These definitions shall not deprive the maker or seller of hosiery of the right to use any other terms that he may see fit to use instead of sheer, semi-service or service for fabrics coming under these respective classifications, but no fabrics shall be classed under these respective classifications mentioned unless they come within the specifications given.

Stamping of Merchandise

The committee recommended that Grade A merchandise shall not be stamped, but that the stamping of all other grades and classifications be made mandatory.

Regular goods of Grade B construction shall be stamped "Grade B."

Committee of Industry At Work More Than Year On Standards

The proposed standards are a result of considerable effort and work performed by a special committee appointed by the National Association of Hosiery Manufacturers a year ago last February. The members are:

W. H. Gosch, Chairman, *Nolde & Horst Co.*
 J. P. Margeson, *Phoenix Hosiery Co.*
 J. J. Kronenberg, *Wayne Knitting Mills*
 J. H. Davenport, *Davenport Hosiery Mills, Inc.*
 Wm. D. Burkey, *Burkey Underwear Co.*
 W. F. Muller, *Wm. F. Muller, Inc.*
 A. K. Underkoffler, *M. B. Bergey Co.*
 Geo. F. Lang, *Co-Ed Silk Hosiery Mills*
 J. C. J. Strahan, *Strahan & Co., Inc.*
 C. S. Bromley, *Quaker Hosiery Co.*
 H. F. Voss, *Victor Silk Hosiery Co.*
 R. O. Huffman, *Morganton Full Fashioned Hosiery Co.*
 F. Seifart, *Hudson Silk Hosiery Co.*
 Gustave Aberle, *H. C. Aberle Co.*
 E. M. Schenke, *National Bureau of Standards*
 George McCallum, *Propper-McCallum Hosiery Co.*
 E. N. Ditton, *Gotham Silk Hosiery Co.*
 H. G. Fichtner, *Boonton Full-Fashioned Hosiery Mills*
 W. H. Freschl, *Holeproof Hosiery Co.*
 R. K. Boadwee, *Julius Kayser & Co.*
 Roy E. Tilles, *Gotham Silk Hosiery Co.*

Much of the detail, in the way of examining samples, conducting tests, and preparing special specifications, was done by a subcommittee consisting of

W. H. Gosch, Wm. D. Burkey, E. N. Ditton, W. F. Muller, E. M. Schenke, J. C. J. Strahan and Roy E. Tilles.

The proposals not only establish definite minimums of construction for hosiery of the various types covered, but also cover standards of inspection.

Up to the present time, each mill within the industry has been left to its own resources, and has had its own standards of inspection, depending very largely upon the human eye, with the result that there has been a wide variation in classification by the industry.

Regular goods of Sub-Standard construction shall be stamped "Sub-Standard."

Irregulars and/or Seconds of Grade A construction shall be stamped "Irregulars" and/or "Seconds."

Irregulars and/or Seconds of Grade B construction shall be stamped "Grade B Irregulars" and/or "Grade B Seconds."

Irregulars and/or Seconds of Sub-Standard construction shall be stamped "Sub-Standard Irregulars" and/or "Sub-Standard Seconds."

Thirds, regardless of whether Grade A, Grade B, or Sub-Standard, shall be stamped only as "Thirds."

The nature, size, and location of such stamps or transfers shall be in accordance with the Fair Trade Practice Provisions of the Code.

Standards of Inspection

The purpose of this phase of standardization is to create practical inspection standards according to which firsts, irregulars (and/or seconds) may be graded.

In classifying silk irregularities and menders, it was felt that since a mender of the same size as any given silk irregularity would have the same appearance in the finished stocking, it would simplify matters to adopt the same classification for both. In discussing menders it must, however, be kept in mind that this category does not include what is known in the trade as a "sew-up." All sew-ups must be classified as thirds, regardless of the part of the stocking in which they appear.

The stockings have been divided into two classes by weight, sheer and heavy, it being understood that heavy includes both semi-service and service weights as defined above.

Silk Variation (Unevenness)

It was found to be extremely difficult, if not impossible, to set up standards for firsts and irregulars (seconds) due to silk variations, because the inspection, being entirely visual, depends too greatly upon the human element to permit sufficient accuracy of judgment.

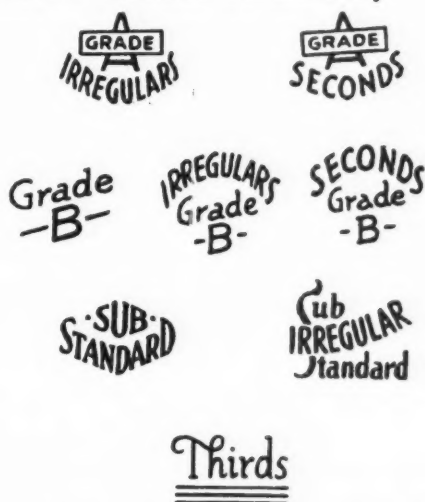
Moreover, the present trend toward three-carrier construction makes it inadvisable to attempt classification at this time. The same holds true in the case of bad instep matching.

A report on irregulars (seconds) due to bad instep matching will be submitted at the same time as that on silk variations (unevenness) because the committee believed these two subjects should be considered together.

Thirds

The committee, having defined firsts and irregulars (seconds) to the farthest extent possible in the light of the information at present at their

Proposed Way to Designate Various Grades of Hosiery



A regular Grade A stocking may not be so stamped, but all other grades, including irregulars and seconds, must be stamped.

disposal, recommends that the question of thirds should be left to the discretion of the individual manufacturer, with the exception that all sew-ups must be classified as thirds.

Federal Specifications Available From ASA

Federal specifications which have become effective for Government purchases have been received by the American Standards Association Library. Copies can be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., or through the ASA office at five cents each. Members of the American Standards Association may borrow copies through the ASA Library. The most recent specifications are:

Fresh Asparagus HHH-A-731
 Fresh Lima Beans HHH-B-141
 Canned Lima Beans JJJ-B-126a
 Green or Wax String Beans HHH-B-156
 Fresh Broccoli HHH-B-691
 Fresh Celery HHH-C-191
 Fresh Green Corn HHH-C-591
 Fresh Slicing Cucumbers HHH-C-751
 Rubber and Rubber-Substitute Erasers ZZ-E-661
 Graphite Lubricating Grease VV-G-671
 Mineral Lubricating Grease VV-G-681

Enlarged S.A.E. 1935 Handbook Includes 3 New Standards Projects, Many Revisions

CONTAINING in definitive form results of three important Society of Automotive Engineers' standards projects completed during the year 1934 and many other important revisions and additions, the 1935 edition of the *S.A.E. Handbook* is being distributed. Most of the edition of 7,000 has gone to members of the Society in nearly every country of the world.

New Material

Of the new material in the *Handbook*, perhaps the most important inclusion is a complete revision of the Iron and Steel Specifications and the Non-Ferrous Metals Specifications. The last complete previous revision in these categories was made in 1922. Progress in the art since that time required that the Iron and Steel Division of the S.A.E. Standards Committee spend over a year in complete revision and modernization of specifications, chemical compositions, and heat-treatments in order to produce a new epitome of the subject which shall be of maximum benefit to the many industries using it.

Other new material in the *Handbook* includes revised tables of screw threads and bolts and nuts which have been established as American Standard under the sponsorship of the S.A.E. and the A.S.M.E. New specifications have been set-up for the straight 8, 12, and 16-thread-per-inch classifications covering Class 2 and 3 fits in the 8 to 12 pitch series and Class 3 fits in the 16-thread series. There has been added to this group a series of valuable tables covering special pitched threads in Class 2 and 3 fits and thread diameters from No. 10 to 11½ inches inclusive.

Complete explanation is given in the *Handbook* of the three cost classifications or cost record plans designed to serve different sizes and types of motor-vehicle fleet operations. A separately published pamphlet of this report includes types of all the necessary forms that are required for using the Uniform Motor-Vehicle Operating Cost Classification.

Uniform Data Reports

Another set of forms which is expected to find wide use in the automotive industry provides for uniform reporting and filing of motor-vehicle lubrication data. By obtaining a supply of this S.A.E. standard form to cover his new vehicle models, the motor-vehicle manufacturer will be enabled to send to every source requiring the

information complete standardized and accurate data about the lubrication of his vehicles, at a minimum of cost and effort.

Spark-plug specifications appearing in previous editions of the *Handbook* have been revised and brought up-to-date and are thoroughly in accord with modern practice in this branch of the automotive engineering art.

Revised specifications for reflex reflectors used on motor-vehicles and in laboratory tests of electric headlamps are also included.

Because of the frequent changes in tire and rim practices, the obsolete previous specifications have been omitted, especially as up-to-date specifications are obtainable through the Tire and Rim Association.

Cooperative Project

Data have been included covering the oval diameters for tanks on fuel tank trucks. These data have been added as a result of a cooperative project with the American Petroleum Institute and a Committee of the Tank Manufacturers lasting two years.

The storage battery specifications have been brought up-to-date and valuable new information on the method of testing has been included in the 1935 edition of the *Handbook*.

The complete report of the Automotive Transportation Code Committee has been published in the 1935 edition of the *Handbook* as a guide in connection with motor-vehicle regulatory and similar matters.

Distribution

The new edition contains 672 text pages and 24 pages of index. First published in 1911 the *S.A.E. Handbook* was then issued in loose-leaf pamphlet form. Beginning with the 1926 edition it was published in permanent binding but in a smaller size than the present edition, the format of which was established with publication of the 1933 edition. Distribution of the *Handbook* is not limited to the automotive industry. The Society of Automotive Engineers has in its files letters indicating the use of S.A.E. standards in scores of industries having no connection with automotive production. \$5.00 per copy, *Society of Automobile Engineers, 29 West 39th Street, New York.*

How National Standards Serve In Municipal Building Code Revisions

by

C. M. Stegner,

*Commissioner of Buildings,
Cincinnati, Ohio*

Clear and easily-understood requirements are needed by building commissioners and inspectors who are expected to enforce building laws

ANYONE who has served as a member of a municipal building code revision committee knows the value of national standards for this purpose. No one will claim that his city building code is complete and up to date. As chairman of the Cincinnati Building Code Revision Committee, I know our code is not all that it should be, although it has been said that this code is the most comprehensive and modern of any. The Cincinnati Building Code is a 6 in. x 9 in. book with 400 pages. Many books and pamphlets supplement the building code and are listed in its appendix. There is an 8 in. x 14 in. book of zoning maps with 150 pages which are part of the zoning chapter, and 26 regulations of the National Board of Fire Underwriters adopted by reference to supplement three of the Building Code Chapters. One of these regulations is the building commissioners' bible, the National Electrical Code. Another reference is 34 pamphlets of the American Society for Testing Materials, adopted by reference to supplement four Building Code Chapters.

Then there is the Safety Code for Elevators, Dumbwaiters, and Escalators, an American Standards Association regulation, also adopted by reference as the law for elevators.

In addition to these we have the regulations of the American Concrete Institute, the American Institute of Steel Construction, the American Society of Heating and Ventilating Engineers, the American Welding Society, etc., making a total of 75 supplementary regulations for the Cincinnati Building Code. All of these standardized regulations, if printed in full, with the same type and size of page as the Building Code would increase its size from 400 to 1600 pages. It may therefore be said that the Cincinnati Code is 75 per cent standardized.

The enactment of a comprehensive building code must be preceded by enabling state legislation for a city charter with broad home rule provisions such as Cincinnati adopted in 1926. The code of municipal ordinances should also have an administrative chapter providing for the allocation and coordination of all administrative departments under one chief executive. This permits the assembly of all subjects pertaining to buildings in the Building Code, to be administered by one departmentalized office.

Coordination Reduces Cost

A complete and comprehensive code will provide a better balanced municipal service, with stress proportional to the necessity of the code requirements, rather than over-stressing some features at the expense of others that are more important. Such coordination reduces administrative costs and provides for greater public convenience by having all building regulations administered in one office.

The adoption of national standards for municipal building codes requires an enabling section. This should be so formulated as to permit the adoption of standards by reference rather than by printing them verbatim.

To illustrate, the adoption of the National Electrical Code as a Cincinnati ordinance is as follows:

"All electrical wiring, apparatus or appliances for furnishing light, heat, power, or for other purposes, shall be in accordance with the 1933 National Electrical Code as approved by the National Fire Protection Association and by the American Standards Association and the special requirements in Sec. 2405 and Chapter 5."

Section 2405 is the regulation for gas tube or Neon lighting systems and Chapter 5 provides for the location and intensity of illumination in various building occupancies.

Keeping Up To Date

When a new National Electrical Code or any other standardized regulation is promulgated, amending ordinances will be enacted substituting them for the present editions. In this way the building code can be kept up to date without much difficulty or expense.

These regulations were formulated at great expense, representing national experience and technique which no municipal building code committee could even approximate. When an out-of-town inquiry is received for a copy of our electrical regulation, it is returned with a pencil notation of "1933 National Electrical Code." It is nationally recognized and available everywhere. The same applies to the other standardized regulations. When national distributors submit plans for gasoline service or bulk stations, they are told that our regulation is the National Board of Fire Underwriters' regulation on flammable liquids. The usual reply is that this is the company standard also, and there is no argument over details.

In spite of detailed criticisms that have been made from time to time, we are still very much sold on the idea of adopting standard regulations for building codes and believe that in time the various standardizing committees responsible for these regulations will see fit to write them in a manner more useful to building officials.

Need Uniformity

Standardized technical regulations are the solution for uniformity in building codes. This has heretofore been regarded as an impossibility. Where the regulations do not adequately take care of all necessary requirements, they can be supplemented by local ordinances.

We have not had to do this with most of our adopted standards but the number of unsafe electric sign installations forced us to supplement Article 38 of the National Electrical Code with standard spacing requirements taken from the Underwriters' Laboratories standards for gas tube signs. These requirements prohibit the use of leads in show windows and elsewhere when subject to mechanical injury, and specify an all-metal enclosure with standard spacings. They have worked very satisfactorily in marquis installations, and also gas tube outlining letters on the outside of buildings where the secondary wiring is inside.

We are not trying to compete with or to re-

place the work of Underwriters' Laboratories, but we are simply aiming at results equivalent to label construction where the wiring is done in the field, and where the factory inspection system of the Laboratories does not function. There is no reason why standard spacings are not just as necessary on an installation wired in the field, as one wired at the factory. The National Electrical Code gives no spacings, and is very indefinite in its provisions for sign construction and outline lighting. Mimeographed copies of our regulation are available to those who are experiencing similar troubles.

Many Interpretations

Those who are working in the field, and who are charged with the enforcement of public safety provisions, can do much to promote regulations which are clear and understandable. We have listened to many discussions of code provisions, and we were surprised to hear almost as many interpretations as there were men participating in the discussion. We realize that the National Electrical Code, for example, is not a hand book or construction guide, and we know that it is a standard set of rules formulated for the purpose of safeguarding life and property, but we believe that these rules can be so worded or stated that the technician can read and use them without requiring his own opinion to enter into the interpretation. We have often thought that rules which require numerous volumes of explanations do not deserve to be called rules. Perhaps, the National Electrical Code should contain more diagrams and tables; on the other hand, we might suggest a complete treatment of a subject without any cross references between articles and sections.

Provisions Indefinite

This again brings us back to Article 38 on signs, wherein we are told that the provisions of this article are additional to Articles 1 to 20, inclusive. We wonder how many electricians doing sign work will read article 38, and Articles 1 to 20, inclusive, covering 200 pages, in order to ascertain how to install a sign. We have issued bulletins with diagrams showing how the work should be done, but this is a rather troublesome procedure, and should not be necessary where any set of rules is adopted. We believe that the problem can be solved if Code Committee members will put themselves in the place of the official, electrician, and inspector, for these after all are the ones who bear the brunt of responsibility for indefinite and uncoordinated regulations.

New Committee Organizes to Standardize System of Electric Magnitudes and Units

Dr. A. E. Kennelly, Professor Emeritus of Electrical Engineering, Harvard University, was elected chairman of the new Sectional Committee on Electric and Magnetic Magnitudes and Units, and E. C. Crittenden, Assistant Director, National Bureau of Standards, was elected vice-chairman, at the organization meeting of the committee in the Engineering Societies Building, May 2. J. W. McNair, Electrical Engineer of the American Standards Association, was elected secretary of the committee.

The new sectional committee, which is working under the sponsorship of the Electrical Standards Committee, replaces a former special committee of the United States National Committee of the International Electrotechnical Commission, the sole function of which was to advise the USNC of opinion in regard to international standardization work on electric and magnetic magnitudes and units.

International Work

The committee gave careful consideration to the work which is to be brought up at the Plenary Meeting of the International Commission in June of this year and formulated a series of recommendations. Dr. Kennelly will be the American delegate and also is chairman of the U. S. National Committee.

A subcommittee, of which E. C. Crittenden was elected chairman, was authorized to study and report upon fundamental systems of equations and units as employed in the sciences of electricity and magnetism. The subcommittee will thus explore the entire field of electric and magnetic magnitudes and units to see if it is possible to recommend a single system of electric and magnetic magnitudes and units for use by physicists to replace the present rather confused situation involving several systems.

The sectional committee will also collect in the form of a single pamphlet all of the decisions which have been made in the past by the International Electrotechnical Commission in respect to electric and magnetic magnitudes and units in order that they may be available to authors and workers in the field. Such of the decisions as appear to be suitable for American adoption will be considered by the sectional committee, with a view to recommending them to the American Standards Association for approval as American Standard.

The membership of the new sectional committee is shown in the box on this page. It includes all of the members of the former special committee, together with representatives of other organizations. This new representation was provided

Scientists and Engineers Complete Membership of Committee on Units

Representatives of organizations interested in pure science, as well as electrical, radio, and mining engineering groups which are interested in the application of standard magnitudes and units, round out the new Sectional Committee on Electric and Magnetic Magnitudes and Units in accordance with the policy of the American Standards Association, which requires balanced representation on all sectional committees. The Electrical Standards Committee is responsible for the work of this sectional committee.

Members of the committee are:

A. E. Kennelly, American Institute of Electrical Engineers, *Chairman*

E. C. Crittenden, National Bureau of Standards, *Vice-Chairman*

J. W. McNair, American Standards Association, *Secretary*

American Institute of Electrical Engineers, **A. E. Kennelly**, **C. H. Sharp**, **W. I. Slichter**, **V. Karapetoff**

American Association for the Advancement of Science, **A. P. Wills**.

American Institute of Physics, (*to be appointed later*)

American Society for Testing Materials, **H. L. Curtis**, **W. J. Shackelton**

ASA Electric Light and Power Group (*to be appointed later*)

ASA Telephone Group, **W. J. Shackelton**, **H. S. Osborne**

Institute of Radio Engineers, **J. H. Dellinger**

National Bureau of Standards, **E. C. Crittenden**

National Electrical Manufacturers Association, **J. J. Smith**, **I. M. Stein**, **R. E. Hellmund**, **W. N. Goodwin, Jr.**

National Research Council, **Leigh Page**

Society for the Promotion of Engineering Education, **Harold Pender**, **C. V. O. Terwilliger**

because, in order to comply with the basic principles upon which sectional committees of the ASA are organized, it is necessary to have representation from all concerned with the subject. It will be noted that the committee will eventually have substantial representation from organizations interested in pure science, such as the American

Association for the Advancement of Science, the American Physical Society, and the National Research Council.

The membership of the subcommittee will be selected by conference between the chairman of the sectional committee and chairman of the subcommittee.

Empire Cooperation Marks Year's Work, Australian Standards Society Reports

EIGHTY-THREE new Australian Standards were approved during the past year, and 20 new draft standards were issued for review, according to the Fifth Annual Report of the Standards Association of Australia, received by the American Standards Association.

A large proportion of the new standards are British Standards Specifications endorsed for Australian requirements. Under the system of collaboration developed by the Empire standardizing bodies, particularly since the Ottawa Imperial Conference, each draft British Standard is carefully reviewed in each of the Dominions, whose recommendations strongly influence the final drafting of the specification.

There is a growing tendency toward uniformity in the revision of British and Australian standards which hitherto have contained points of disagreement. In a group of specifications now undergoing simultaneous revision, both organizations have moved in the direction of a compromise.

There has been a remarkable increase in the number of draft British Standard Specifications received for review during the past year under the scheme of collaboration developed by the Empire standardizing bodies. Only when specifications are of particular importance to Australia are they considered for endorsement as Australian Standards, but it is desirable, in the opinion of the Australian Standards Association, to undertake a review of all the standards, if possible, and to forward representative Australian opinions to London.

A Year for Review

When endorsement is considered, the standard as finally published by the British Standards Institution must be reviewed again, and, if approved, press notices are published throughout Australia calling attention to the standard as subject to criticism for one year. Comments received during the year are then examined and a final

decision is made as to the adoption of the British specification as an Australian Standard.

This careful treatment is considered necessary because of the important bearing any one specification may have upon Australian industry.

In a number of universities and colleges, specifications and codes approved by the Standards Association of Australia are listed as textbooks and books of reference, and are regarded as of particular value in the training of technical students.

Copies of the British Colour Council's standard schedule of colors, approved by the British Standards Institution as a British Standard, have been received by the SAA for consideration as an Imperial Standard. This action was taken as the result of a resolution passed at the Ottawa Imperial Conference in 1932. It represents the first attempt to prepare and issue a specification as an actual Empire Standard.

Simplified Practice on Tools Is Now Effective for Use

A revision of Simplified Practice on Forged Tools (now R17-35) has been given the required degree of acceptance by the industry and became effective May 1, according to an announcement by the Division of Simplified Practice, National Bureau of Standards.

The current revision covers kinds, sizes, weights, etc., of forged tools of various descriptions such as picks, mattocks, hoes, bars, wedges, sledges, hammers and mauls, railroad track tools, blacksmith anvil tools, tongs and miscellaneous tools. The dimensions and shape of eyes for these tools are included.

Copies of the recommendation are available from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Grades for Canned Goods Protect Canadian Buyer

PROPOSED labeling for quality of canned fruits and vegetables in the United States has brought forth much controversy. In Canada, where the system has been operating for many years, it is interesting to study results from the angle of the woman who buys the commodity. Government inspection for sanitary conditions of plants doing interprovincial and export trade has been in force since 1907. The pure food laws of the Dominion permit no adulterant, chemical preservative, or coloring (except in the case of maraschino cherries in fruits for salad) in these products. Therefore, Canadian women have learned to rely on the government protection, and they know that the foods are clean and that nothing but pure water and salt or sugar have been added.

Graded Since 1918

Since 1918 all cans of fruits and vegetables in Canada, whether domestic or imported, have been marked for grade of quality and carefully inspected. But even yet Canadian buyers are not all completely grade conscious.

The result of the independent investigations made by General Marketing Councillors, Inc., of New York has been of greatest interest and satisfaction. In the report of this investigation Mr. Jean F. Carroll states:

"Even though Canadian canners have been required for the last 16 years to show Government grades on canned foods, the system has not resulted in making Canadian women familiar with the different grades of canned fruits and vegetables. We are sure that this is the true situation, for we went into all classes of homes and spent enough time interviewing each woman to be sure we knew how much knowledge she had regarding grades. The survey shows that only one woman out of every four has been made conscious of the fact that there are grades on the labels of the Canadian canned foods that she buys, and this is the situation in spite of an educational campaign that the Canadian government has been

conducting to teach women to know grades and to make their purchases by grades."

Educational Work Was Limited

This investigation, if at all biased, was toward the side of discrediting our system. The report is perhaps the best bit of advertising grade marking has had. It is true that the regulations have been in force since 1918, but no publicity was given the fact until 1929, as it was felt that the buyer was protected whether she had knowledge of it or not. The educational campaign to which Mr. Carroll refers has been very limited. For the last five years part of the time of one woman has been given to educating the Canadian buyer—probably less actual time, and certainly less money, has been spent on it than was used in making the survey.

By use of a pamphlet (No. 113) issued by the Dominion Department of Agriculture and talks to women's organizations and schools of home economics, the information is gradually spreading, so that we feel proud that even one woman in four is now grade conscious and that stores consider it as advantageous to advertise by grade.

Four Quality Grades

There are four grades of quality in Canada:

Fancy: as nearly perfect as possible, packed from sound, clean fruit or vegetables at perfect maturity and free from blemishes, of good color and uniform in size. The workmanship must be good and the liquid must be clear.

Choice: allows slight variation in size, color, and maturity, but must be packed from fruits and vegetables which are sound, clean, and free from blemishes. The liquid must be fairly clear.

Standard: All fruit and vegetables must be of good quality and good maturity, although they need not be uniform in size or color. The liquid must be fairly clear.

Second: (of which practically none appears on the retail market) must be packed from clean, sound fruit or vegetables, but absolutely lacks uniformity.

Of course there is variation within each grade, and here, knowing well the value of grade, the good buyer still uses brands and is willing to

¹Abstract from an article by Edith L. Elliott, *Journal of Home Economics*, May 1935.

pay a higher price for a known brand which is packed well above the minimum requirement for the grade. The law does not prevent the packer putting higher quality than is necessary into his cans, but it does assure the buyer that she will not get a lower quality than is marked on the label.

Requirements Published For Gas Appliance Accessories

Printed copies of five recently approved standard requirements for accessories to be used with gas-burning appliances are now ready for distribution.

Standard requirements which must be met by these accessories before they can be listed as satisfactory equipment by the American Gas Association were prepared by a committee sponsored by the AGA under the procedure of the American Standards Association. This committee, widely representative of all interested in gas-burning appliances and accessories, approved the requirements after they were outlined by a subcommittee of control accessory manufacturers and gas companies appointed by the sectional committee.

The newly published pamphlets give listing requirements for the following accessories:

| | |
|---|----------|
| Domestic gas appliance pressure regulators | 35 cents |
| Automatic devices designed to prevent escape of unburned gas--- | 30 " |
| Automatic main gas-control valves | 30 " |
| Relief and automatic gas shut-off valves for use on water-heating systems | 40 " |
| Water heater, gas range, and space heater thermostats | 40 " |

Copies of the requirements can be purchased from the American Gas Association, 420 Lexington Avenue, New York, or from the American Standards Association. Members of the American Standards Association are entitled to 20 per cent discount on all approved American Standards ordered from the ASA.

Australian Safety Code Gives Rules for Elevators

A code for elevators, giving standard rules for the design, installation, testing, and operation of elevators and escalators, was adopted recently by the Standards Association of Australia.

The Code is to form one of a series on various subjects which have been or are being formulated

by the Codes Group of the Association. It is intended as a guide to government and municipal authorities in the drafting or revising of the technical portion of their regulations and by-laws and may be adopted by them in whole or in part. It is intended also to act as a standard reference for safety requirements for the use of architects, consulting engineers, and as a standard of practice for hotels, departments stores, office buildings, and other places in which lifts and escalators are used.

Revisions will be made in the Code from time to time taking into account such changes as experience and advance in the industry may dictate.

A limited number of copies of the standard are now available from the American Standards Association free of charge.

Railroads Receive Prizes for Safety

Plaques of the National Safety Council in the 1934 railroad employees' safety contest, in which all Class I steam roads participated, have been awarded to eight Class I railroads and one Pullman Company zone.

The awards were as follows:

- Group A—Chicago & North Western Railway.
- Group B—Atlantic Coast Line.
- Group C—Oregon Short Line.
- Group D—Gulf, Mobile & Northern.
- Group E—Charleston & Western Carolina.
- Group F—Nevada Northern.

In Class I, switching and terminal railroads, the Indiana Harbor Belt Railroad received the Group A award, and the Conemaugh & Black Lick Railroad of Johnstown, Pa., won the Group B plaque.

Pullman Zone Award

In an auxiliary contest among eight Pullman Company zones, the Atlanta zone, without a casualty, took first prize.

The plaques were given for the lowest casualty rates in train, train service and non-train accidents, based on the number killed plus the number of injured per million man-hours, the roads being grouped according to millions of man-hours worked.

The awards, based on figures of the Interstate Commerce Commission, were concerned only with casualties to employees.

The Chicago & North Western has won awards of the Council for several successive years. George B. Vilas, vice president and general manager of the road, received the plaque for his company.

The contest began in 1923, in which year the record was 1,866 employees killed and 148,146

injured, with a casualty rate of 30.89 per million man-hours worked. In 1934 the record showed 500 killed, 15,703 injured and a casualty rate of 7.04 per million man-hours worked.

Predicts Increased Safety

The awards were made by a committee consisting of John E. Long, president of the Council; Dr. M. O. Lorenz of the Interstate Commerce Commission, and Lew R. Palmer of the Equitable Life Assurance Society.

"Increased safety on the railroads will go hand in hand with higher speeds," Mr. Long said to the winners.

Propose Simplification on Forged Axes and Hammers

The General Tool and Implement Association requested the cooperation of the Division of Simplified Practice, National Bureau of Standards, in developing Simplified Practice Recommendations for forged axes, forged hammers, and forged hatchets, according to an announcement from the Bureau.

Proposals have already been mailed to all interests in the industry for their consideration and acceptance.

The recommendation covering Forged Axes lists patterns, range of weights, and grades for single-bit, double-bit, and miscellaneous types of axes. The eliminated varieties represent 40 per cent of the sizes now listed, according to an estimate of the General Tool and Implement Association.

The proposal on Forged Hammers lists kind, grade, style, and weight of handled hammers for all purposes. The eliminated varieties represent 50 per cent of the sizes now listed, the General Tool and Implement Association estimates.

The recommendation on hatchets lists grade, kind, and sizes of handled hatchets for all purposes. The eliminated varieties represent 45 per cent of the sizes now listed, it is estimated.

Copies of the proposal can be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Hidden Values Revealed In Pamphlet Series

"Hidden Values" is the title of a new series of pamphlets issued by Sears, Roebuck and Company to help its customers in the selection of good merchandise.

Essential characteristics to be chosen in such diversified products as modern plumbing equip-

Standards Are Considered Text Books for Engineers

To some people the term standardization is anathema. To them standardization means bringing us to a dead low level of uniformity. They think that if young engineers were to go straight to standard specifications, instead of thinking things out for themselves, it would be disastrous, but the same argument might be used to discourage the use of text-books. The study of a good specification, drawn up by competent persons, should have a distinct educational value.

Can any one believe that the imagination and constructive ability of the consulting engineers responsible for such vast works as the Forth Bridge, the Sydney Bridge, the Mersey Tunnel, and others, has been in the slightest degree adversely affected by such standards as are being produced? Speaking as a shipbuilder, there is no other industry in which there is so much "working to rules, regulations, and standards," yet the professional men in that business go on designing new structures and engines, and their engineering status is not "at a low level of uniformity."—*Sir Archibald Denny, Bart., Engineering, London, May 3.*

ment, paint and paint brushes, kitchen stoves and ranges, cooking utensils, hosiery, shoes, children's clothes, and bedding are covered in the series.

Copies of the pamphlets can be obtained from the Educational Division, Sears, Roebuck and Company, Chicago, Ill.

Manufacturers Supply Standard Size Brick

The brick manufacturers supplying the New York district are now supplying standard size brick as defined by Federal Specification SS-B-656, with the permissible variation of $\frac{1}{8}$ inch in breadth or depth and $\frac{1}{4}$ inch in length, the Brick Manufacturers Association of New York announced.

SAFETY *is Profitable*

**Does your FACTORY meet
the MINIMUM requirements ?
for industrial SANITATION ?**

Sanitation requirements which are *essential* for the continued good health and working efficiency of employees in factories have been set by a committee representing every interest. This work has taken several years to complete, and has been carried on under American Standards Association procedure.

Here they are:

| | |
|---|-----|
| Industrial Sanitation Code | 20c |
| Specifications for Drinking Fountains | 10c |
| The Sanitary Privy | 10c |

(Members of the American Standards Association are entitled to 20 per cent discount on all American Standards. Please deduct this discount when paying for standards.)

**American
Standards
Association**

**29 W. 39 St.
New York**

